# SKEW-TOLERANT GRAY CODES

## BACKGROUND OF THE INVENTION

10/735,541

11/21/04

[0001] This application contains subject matter related to co-pending Patent Application serial number _____, for "SKEW-TOLERANT GRAY CODE FOR A MOVEABLE OBJECT", which was filed on December 12, 2003, the same day as this Patent Application.

[0002] A Gray code is a set of $2^n$ distinct code words, essentially binary numbers, each having $n$ bits. Each bit position of a code word is called a co-ordinate position. Since code words may be digital numbers, each coordinate position may also be called a bit position. Gray codes have the property that consecutive code words differ in only one co-ordinate position. A Gray code is characterized by a transition or code sequence, an ordered list of bit positions manifesting the co-ordinate positions whose values change from one code word to an adjacent code word. A code sequence may be embodied in a code table having rows wherein a row is occupied by a code word having a position in the table corresponding to the position of the code word occupying it in the code sequence.

[0003] Gray codes are used to encode the positions of moveable objects such as magnetic disks, optical disks, shafts, periscopes, and so on. (It should be noted that the position of an object is different and distinct from the co-ordinate position of a bit in a code word.) Such a moveable object has a Gray code placed upon it in a discernible form, usually as a sequence of marks that extends in the direction in which the object moves. Each position of the object in the direction of motion has a set of marks that form a code word. The successive positions are marked with the code sequence. As the object moves, successive positions are identified by reading and decoding successive sets of marks. The set of marks for any position differs from the set of marks in an adjacent position only by the value of marks in one co-ordinate position. Gray coding is favored for positional encoding because of the ease, speed and accuracy with which the code words of adjacent positions can be decoded.